



520.43032X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Ai SATOYAMA et al.

Serial No.: 10/649,766

Filed: August 28, 2003

For: STORAGE SYSTEM

Group: 2182

Examiner: Not yet assigned

**INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §1.97 & 1.98**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

December 22, 2004

Sir:

In the matter of the above-identified application, Applicants are submitting herewith a search report and copies of the documents listed in the attached form equivalent to Form PTO-1449 for the Examiner's consideration.

This information disclosure statement is being submitted before the mailing date of a first office action on the merits.

Each of the documents listed on the attached form equivalent to Form PTO-1449 is in the English language.

It is respectfully requested that this information disclosure statement be considered by the Examiner.

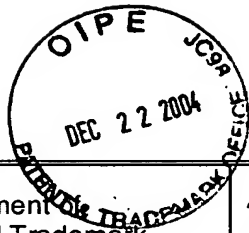
Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Mattingly, Stanger & Malur, Deposit Account No. 50-1417 (referencing attorney docket no. 520.43032X00) please credit any excess fees to such deposit account.

Respectfully submitted,



Frederick D. Bailey
Registration No. 42,282
MATTINGLY, STANGER & MALUR, P.C.

FDB/sdb
(703) 312-6600



SHEET 1 OF 1

FORM PTO-1449 U.S. Department of
Commerce (Rev. 4/92) Patent and Trademark
Office

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use several sheets if necessary)

ATTY. DOCKET NO.

520.43032X00

SERIAL NO.

10/649,766

APPLICANT

AI SATOYAMA et al.

FILING DATE

August 28, 2003

GROUP

2182

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6,643,667	11-2003	ARAI et al.			
	6,763,436	07-2004	GABBER et al.			
	2001/0034795 A1	10-2001	MOULTON et al.			
	2003/0204597 A1	10-2003	ARAKAWA et al.			
	2004/0024796 A1	02-2004	TAKEDA et al.			
	2004/0181641 A1	09-2004	NGUYEN et al.			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	ABSTRACT	
						YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation is considered, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(Form PTO-1449 [6-4])

LACASSE & ASSOCIATES, LLC



PROFESSIONAL PATENT SERVICES

1725 Duke Street, Suite 650

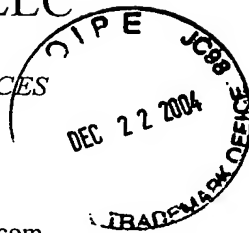
Alexandria, Virginia 22314

Telephone (703) 838-7683

Facsimile (703) 838-7684

e-mail: patserv@lacasse-patents.com

Writer's e-mail: <last name>@lacasse-patents.com



Director
Randy W. Lacasse*

Associate Director
Ram Soundararajan*

Of Counsel
Wes Strickland§

Patent Prosecution
Jaclyn A. Schade*
Monica Ullagaddi
Ben Aghdasi, Ph.D.
Nidhi Malla
Elizabeth A. Hein†

*Registered Patent Agent
§Registered Patent Attorney
†Manager
‡Assistant Manager

Patent Research
Jerry R. Lacasse
Thien Tran*
William C. McBeth
Iuliana Tanase
Sejal Gangar
Ben Aghdasi, Ph.D.
Jesse Miyoshi
Simana Basu
Danielle C. Williams

Patent Services
LaRieko Welch†
Terry L. Lacasse

IP Document Services
Larry J. Hecker†
Brian G. Willingham†
Andrew K. Kamara

September 30, 2004

Via Federal Express

Noboru Otsuka

Hitachi, Ltd.

IP Development & Management Division

Patent Dept. 4

292, Yoshida-cho, Totsuka, Yokohama-shi

Kanagawa, Japan 244-0817



RE: PATENTABILITY SEARCH FOR STORAGE SYSTEM
Your File: 340201771US01
Our Docket: PSP-1041858

Dear Mr. Otsuka:

In accordance with your request, we have conducted a patentability search on the above-identified subject matter.

Enclosed with this report are copies of the search results and your disclosure materials. If after reviewing the results, you feel that the search feature (or specific search elements), the field of search, or results are not commensurate with your original request, or you would like to extend the search into additional areas, please contact us.

Sincerely,

Ram Soundararajan
Ram Soundararajan

Enclosures

RS:JT:rb

s04/psp1041858

CONFIDENTIAL
(Patentability Search)

I. SEARCH FEATURE

A. General

Storage System

B. Specific

A storage system comprising a plurality of storage devices and a storage control unit for controlling the plurality of storage devices, the storage control unit comprising:

a first interface for connection to a computer;

a memory for storing a program which, when replicating data in the plurality of storage devices, is capable of selecting a destination volume considering the characteristics of the source volume;

a CPU for executing the program; and

a second interface for connection to the plurality of storage devices.

II. FIELD OF SEARCH

The search of the above features was conducted in the following areas:

A. Classification search

<u>Class</u>	<u>Subclasses</u>	<u>Description</u>
707/		DATA PROCESSING: DATABASE AND FILE MANAGEMENT OR DATA STRUCTURES
	204	.. Archiving or backup
	205	. File allocation
709/		ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: MULTICOMPUTER DATA TRANSFERRING OR PLURAL PROCESSOR SYNCHRONIZATION
	225	.. Computer network access regulating
	226	.. Network resource allocating
	238	. Computer-to-computer data routing
711/		ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: MEMORY
	4	. Dynamic-type storage device (e.g., disk, tape, drum)

<u>Class</u>	<u>Subclasses</u>	<u>Description</u> (Continued)
	111	.. Accessing dynamic storage device
	161	.. Archiving
714/		ERROR DETECTION/CORRECTION AND FAULT DETECTION/RECOVERY
	5 Of memory or peripheral subsystem

The above subclasses represent areas deemed to contain subject matter of interest to one or more of the search features. Please note that relevant references may be classified outside of these areas. The integrity of the search is based on the records as presented to us by the United States Patent and Trademark Office (USPTO). No further integrity studies were performed. Also a key word search was performed on the USPTO full-text database including published U.S. patent applications.

III. RESULTS OF SEARCH

A. References developed as a result of search:

<u>U.S. Patent No.</u>	<u>Inventor</u>
6,643,667 B1*	Arai et al.
6,763,436 B2	Gabber et al.

<u>U.S. Patent Application Publication No.</u>	<u>Inventor</u>
2001/0034795 A1	Moulton et al.
2003/0204597 A1*	Arakawa et al.
2004/0024796 A1*	Takeda et al.
2004/0181641 A1	Nguyen et al.

*Patents are assigned to Hitachi, Ltd.

B. Discussion of references in numerical order:

The patent to Arai et al. (6,643,667 B1) assigned to Hitachi, Ltd. provides a *System and Method for Replicating Data*. Disclosed is a method for automatically selecting a secondary volume. When Auto is selected, the SVP selects the secondary volume from the set of reserved volumes. Code for specifying a relationship between a first logical volume and a second logical volume can be part of a computer program product (see column 2 lines 37-42, 11 lines 2-5).

The patent to Gabber et al. (6,763,436 B2) assigned to Lucent Technologies Inc. provides a *Redundant Data Storage and Data Storage Recovery System*. Discussed is a host element **101** responsible for replicating data between storage devices **105-1-105-N** connected to storage elements **102-1-102-N**. Each of the storage devices **105** can be connected to its respective storage elements **102** using a plurality of interfaces such as FC or ATA (see figure 1, column 4 lines 1-2 and lines 19-23).

The patent application publication to Moulton et al. (2001/0034795 A1) provides for a *System and Method for Intelligent, Globally Distributed Network Storage*. Discussed is a mechanism to strategically select the storage location or locations suitable for a specific task based on the varying characteristics associated with these locations. Data storage management processes select one or more of the storage nodes to serve a data storage request based at least in part upon the particular contexts associated with each of the storage nodes (see paragraphs 17 and 27).

The patent application publication to Arakawa et al. (2003/0204597 A1) assigned to Hitachi, Ltd. provides for a *Storage System having Virtualized Resource*. Discussed is a method of selecting a secondary volume for replication of a virtual volume, where a server **200** may present information about logical volume **500** and the storage area, which are not used in storage systems **100** other than the primary storage **100**. The server **200** may provide the host **300** with the secondary volume specified by the user, or the like, using a method for creating anew virtual volume **500**. Further, automatically providing a secondary volume by server **200** enables a reduction in work required for selecting secondary volume by the user or system administrator (see paragraphs 178 and 179).

The patent application publication to Takeda et al. (2004/0024796 A1) assigned to Hitachi, Ltd. provides for a *Data Storage System*. Discussed is a method for calculating reliability or performance requirements, in relation to each file specified by a storage request. After calculation, a storage destination volume may be selected in accordance with the calculated storage requirements and performance characteristics of each volume, and file may be stored in selected storage destination volume (see paragraphs 13 and 14).

The patent application publication to Nguyen et al. (2004/0181641 A1) assigned to International Business Machines Corporation provides for a *System, Method and Computer Program Product to Automatically Select Target Volumes for a Fast Copy to Optimize Performance and Availability*. Disclosed is a method that may include automatically selecting at least one target volume for writing fast copy-related data and writing the fast copy data to the selected at least one target volume. At least one performance-related criterion can include at least one of a response time of a target volume and busyness of target volume (see paragraphs 8 and 12)



Julia Tanase